



EXPERIMENT NO. 2 HYDROSTATIC FORCE ON A SUBMERGED AND SEMI-SUBMERGED FACE

INTRODUCTION:

Any body submerged in a liquid is subjected to hydrostatic force acting on its surface.

OBJECTIVE:

This activity aims to determine the hydrostatic force on a submerged and semi-submerged rectangular area.

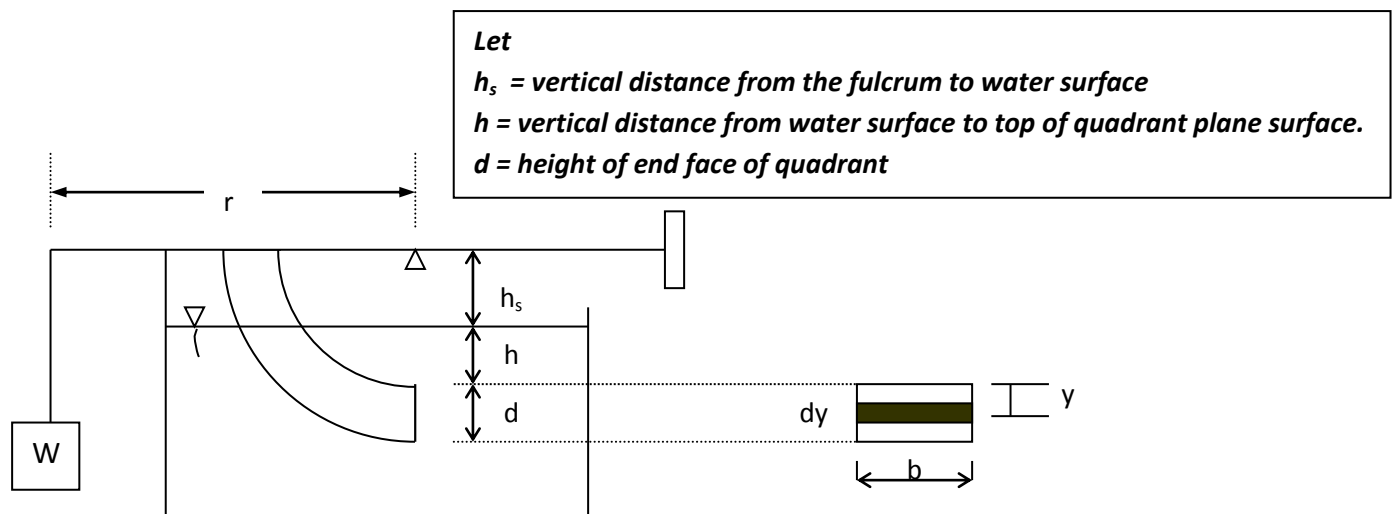
APPARATUS AND SUPPLIES

Center of Pressure Apparatus
Hydraulics Bench

PROCEDURE

1. Set up the apparatus.
2. Place a mass of approximately 50 grams on the balance weight holder.
3. Open pump delivery valve and allow water into the tank until balance arm is horizontal, then close the pump delivery valve.
4. Read height of water level on the scale of torroid.
5. Repeat steps (3) and (4) for various values of weight in the balance pan in about eight steps up to 400 grams.
6. Stop hydraulic bench pump.
7. Disconnect supply hose and allow apparatus to drain

DISCUSSION:



DATA AND RESULTS:**Table 2.1 – Hydrostatic Force on Submerged and Semi-submerged Face**

Weight on Balance Arm, W(kg)	Depth of water above torroid, h(mm)	Depth of water on torroid, d(mm)	Reading on the torroid scale, h+d(mm)	Height of balance arm above water surface, $h_s=200-(h+d)$

Depth of center of pressure, \hat{y} (mm)	Force on end face, F(N)	Moment arm of force in end face, $\hat{y}+h_s$ (mm)	Observed moment, $F(\hat{y}+h_s)$ in (N-mm)	Calculated moment, $9.81*W*r$ in (N-mm)	%Error= $(C-O)/O*100$

PRECAUTIONS

1. Be careful in adding water into the tank. It is better to add than to remove excess water.
2. Make sure that all unnecessary water is removed, such as water adhering on the walls of the tank and water on the top of the torroid. This will cause an error in your gathered data.

CLEANING PROCEDURE

1. After the experiment, remove the water from the apparatus.
2. Check all the weights used.



EXPERIMENT NO. 2
HYDROSTATIC FORCE ON A SUBMERGED AND SEMI-SUBMERGED FACE

Year and Section		Date Started	
Group Number		Date Finished	
Group Members		Date Submitted	

2.1 DATA AND RESULTS:

Table 2.1. – Hydrostatic Force on Submerged and Semi-submerged Face

Weight on Balance Arm, W (kg)	Depth of water above torroid, h (mm)	Depth of water on torroid, d (mm)	Reading on the torroid scale, h+d (mm)	Height of balance arm above water surface, $h_s=200-(h+d)$

Depth of center of pressure, \hat{y} (mm)	Force on end face, F (N)	Moment arm of force in end face, $\hat{y}+h_s$ (mm)	Observed moment, $F(\hat{y}+h_s)$ in (N-mm)	Calculated moment, $9.81 \cdot W \cdot r$ in (N-mm)	%Error= $(C-O)/O \cdot 100$

2.2 FORMULAS AND COMPUTATIONS:

2.3 DRAWINGS/SKETCHES/DIAGRAMS/GRAPHS:

2.4 SOURCES OF ERRORS:

2.5 REMARKS/CONCLUSION: